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ILLUSTRATIONS OF RISK CLASSES FOR PONDEROSA PINE.

Many of the phases of research in the programs of work for the Western Forest Insect Laboratories during recent years have been concerned with studies of the susceptibility of trees to insect attack. In north-eastern California since 1936, the concentration of research work on tree susceptibility has been in developing a method of determining risk on an individual tree basis. In 1938, Salman (2) prepared an office report tentatively describing the four classes of trees which represented degrees of risk to bark beetle attack. Since the preparation of these tentative written descriptions of "risk ratings", several studies have been undertaken to measure the characters of crowns concerned in the four risk classes. Wygant (3) in 1941, found highly significant differences between top and mid crown sections in low and high risk trees for the factors of (1) needle complement per twig, (2) average needle length, (3) average needle bundle diameter, (4) average annual twig growth, and (5) twig diameter. However, variations in these measurements between trees in all risk groups was so great that this data did not furnish a basis which would warrant a revision and improvement of the original risk descriptions. Since 1938, studies have been started in both California and Oregon in an effort to determine the reliability and significance of crown characters indicating high risk and segregate those characters from but temporary disturbances in current tree health for the basis of refinement in risk descriptions. This study cannot be completed however until more loss has occurred on the sample areas.

Since the conception of rating beetle risk to individual trees, there has been a need for a better description of the characters of crown which are used in the four ratings. In studying changes in risk, Eaton in 1940, established a series of trees in each of the four risk classes

and made photographs from permanent hub locations so that subsequent pictures could be made to depict any changes in risk from year to year. The photographs of trees in all groups of risk were intended also to provide pictures of different types of risk trees in order to supplement the written descriptions, ~~of risk~~. In 1941, Eaton (/) assembled paired photographs of trees differing in risk but similar in crown form and age group to illustrate a few risk types. In addition, he prepared a plate of line drawings to illustrate gradations in crown deterioration in ponderosa pine. Because of the need for a pictorial ^{presentation} depiction of risk to supplement written descriptions, an effort to obtain photographs of risk trees in all of Dunning's tree classes was started in 1941. It was planned to incorporate the illustrations with ~~written~~ written descriptions. However, pending the completion of studies leading to better written descriptions, it is believed that the presentation of illustrations obtained thus far will be of definite value for the preparation of research reports and for presenting illustrated discussions of the risk system when and where the need arises.

Six plates have thus far been prepared to show gradations in crown deterioration for most of Dunning's tree classes. The organization of risk illustrations by Dunning's classes, rather than by Keen's susceptibility classes, was made purposely because Dunning's system is used as a standard in timber marking practices in the California region, and the fewer number of classes permits a better selection of illustrations. In Plate I are representative types of young trees (Dunning class 1) in the four groups of risk. Mature dominant trees (Dunning class 3) in the four risk classes are illustrated in Plate II. Dunning class 4 (co-dominant mature trees) are shown in Plate III. The illustrations of risk trees in Plates IV and V are representative of the overmature classes (Dunning class 5 and 5A). Risk distribution in suppressed trees (Dunning class 7) are shown

in Plate VI. In all, there are 24 photographs illustrating six types of trees in the four groups of risk.

Certain flaws in the illustration of risk trees in this manner are apparent. The detail of deteriorated crown symptoms are lacking in many cases. Also, it is difficult to obtain negatives of constant density, and trees illustrating all types of deteriorated crowns which are isolated from thier neighbors. It is suggested that as an improvement in the illsutration of risk trees that the process used by Eaton (bleaching of inked drawings made over photographs) be employed to depict risk types by line drawings. This work could be completed at odd times and be finished when final written descriptions of risk are obtained from other studies.

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REFERENCES.

1. Eaton, Charles B. "A Photographic Study of Risk Trees." Station Report. Berkeley, California. June 25, 1941.
2. Salman, K. A. "Descriptions of risk ratings for ponderosa and Jeffrey pine in eastside forest areas of California. Station Report. Berkeley, California 1938.
3. Wygant, N. D. "Studies of physical characteristics of high and low risk ponderosa pines, Black's Mountain Experimental Forest. Station Report, Berkeley, California 1942.

RISK CLASSES FOR PONDEROSA PINE



RISK 1
Low



RISK 2
Moderate



RISK 3
High

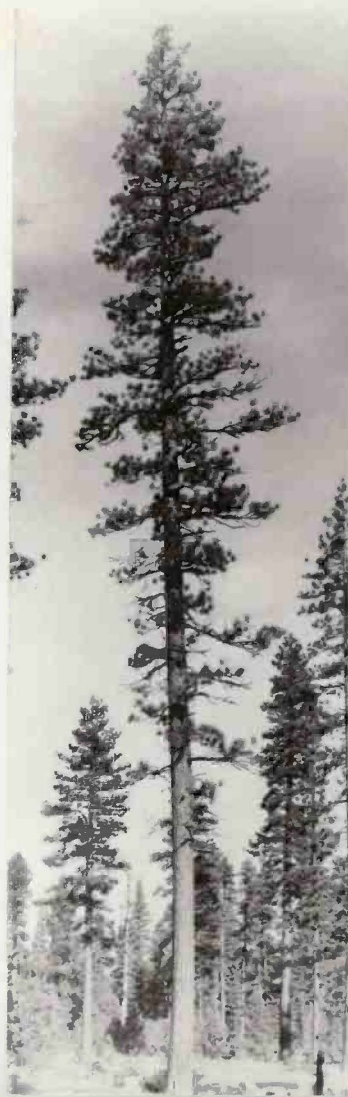


RISK 4
Very High

RISK CLASSES FOR PONDEROSA PINE



RISK 1
Low



RISK 2
Moderate



RISK 3
High



RISK 4
Very High

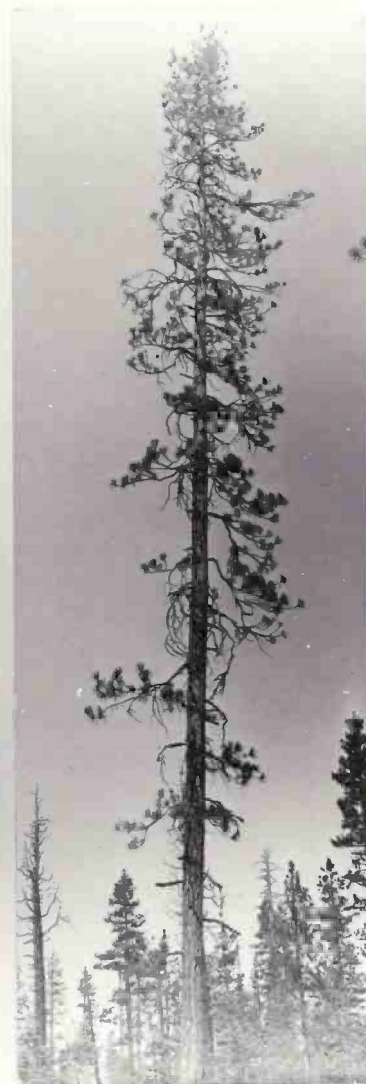
RISK CLASSES FOR PONDEROSA PINE



RISK 1
Low



RISK 2
Moderate



RISK 3
High



RISK 4
Very High

RISK CLASSES FOR PONDEROSA PINE



RISK 1
Low



RISK 2
Moderate



RISK 3
High



RISK 4
Very High

RISK CLASSES FOR PONDEROSA PINE



RISK 1
Low



RISK 2
Moderate



RISK 3
High

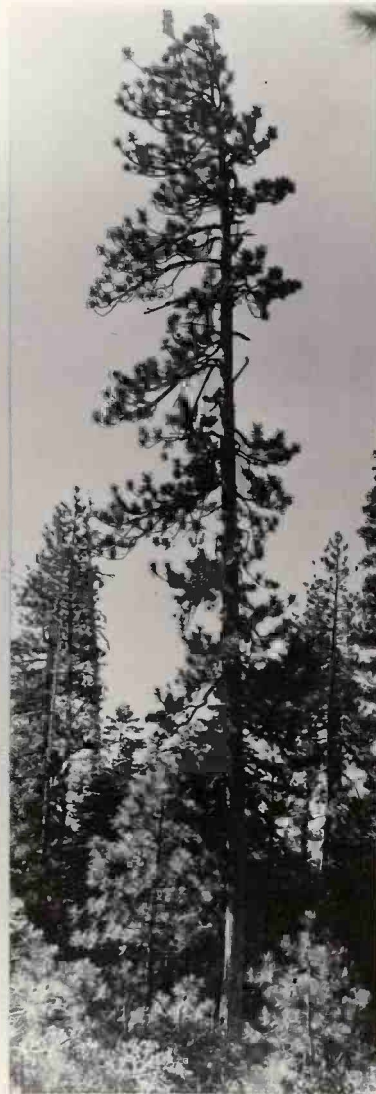


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